

WE CLAIM:

1. A method for dynamic font subsetting, comprising:

receiving a first request on an intermediate network device from an electronic device for electronic content including a plurality characters in one or more desired languages;

5 obtaining the requested electronic content on the intermediate network device from a computer network;

scanning the electronic content to identify one or more sets of glyphs in the electronic content used for the plurality of characters in the one or more desired languages;

10 creating one or more glyph sub-sets for the one or more identified sets of glyphs, wherein the one or more glyph sub-sets include only glyphs identified in the requested electronic content;

15 inserting one or more directives in the requested electronic content to identify the one or more glyph sub-sets needed to display the plurality of characters in the one or more desired languages in the requested electronic content, thereby creating modified electronic content, wherein a directive identifies a glyph sub-set including a set of glyphs identified in the electronic content and an encoding scheme used to encode the set of glyphs; and

20 sending the modified electronic content to the electronic device.

2. A computer readable medium having stored therein instructions for causing a central processing unit for executing the method of Claim 1.

3. The method of Claim 1 wherein the step of receiving a first request on an intermediate network device from an electronic device for electronic content includes receiving a request for electronic content written in a mark-up language including Standard Generalized Markup Language, Hyper Text Markup Language, Compact Hyper Text Markup Language, eXtensible Markup Language, Handheld Device Markup Language, Voice Extensible Markup Language, or Wireless Markup Language.

4. The method of Claim 1 wherein the step of creating one or more glyph sub-sets includes creating one or more glyph sub- sets for Chinese, Japanese, Korean, Vietnamese, Hebrew or Arabic glyphs.

5. The method of Claim 1 wherein the computer network includes the Internet, an intranet or a local area network.

6. The method of Claim 1 wherein the electronic device includes a personal computer, wireless telephone, personal digital assistant, hand-held computer, set-top box, or network appliance.

7. The method of Claim 1 wherein the step of inserting one or more directives in the requested electronic content includes inserting one or more directives as Hyper Text Markup Language META tags into a Hyper Text Markup Language header associated with the requested electronic content.

8. A method for dynamic font subsetting, comprising:

receiving one or more requests on an intermediate network device from an electronic device requesting one or more glyph sub-sets needed to display modified electronic content, wherein the one or more requests are generated by the electronic device as a result of one or more directives inserted into the modified electronic content by the intermediate network device, wherein the one or more directives identifies a glyph sub-set including a set of glyphs identified in the modified electronic content and an encoding scheme used to encode the set of glyphs;

obtaining the one or more glyph sub-sets;

sending the one or more glyph sub-sets to the electronic device to allow the electronic device to display glyphs in the modified electronic content.

9. A computer readable medium having stored therein instructions for causing a central processing unit for executing the method of Claim 8.

10. The method of Claim 8 wherein the step obtaining one or more glyph subsets

5 includes obtaining the one or more glyph sets from a database associated with the intermediate network device.

11. The method of Claim 8 wherein step of obtaining one or more glyph subsets includes consulting a database associated with the intermediate network device to determine what

0 glyph sub-sets, if any, may already exist on the electronic device; and

creating one or more glyph sub-sets including sets of glyphs that do not already exist on the electronic device needed to display the modified electronic content on the electronic device.

12. The method of Claim 8 wherein the step of wherein step of obtaining one or more

5 glyph subsets includes

creating a database entry for the electronic device in a database associated with the intermediate, wherein the database entry includes an identifier for the electronic device and a list of one or more glyph sub-sets sent to the electronic device by the intermediate network device.

20 13. The method of Claim 8 wherein the step of receiving one or more requests includes receiving one or more requests for modified electronic content including one or more directives

written in a mark-up language including Standard Generalized Markup Language, Hyper Text Markup Language, Compact Hyper Text Markup Language, eXtensible Markup Language, Handheld Device Markup Language, Voice Extensible Markup Language, or Wireless Markup Language.

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14. The method of Claim 8 wherein the step of obtaining one or more glyph sub-sets includes obtaining one or more glyph sub-sets for Chinese, Japanese, Korean, Vietnamese, Hebrew or Arabic glyphs.

15. A method for dynamic font subsetting, comprising:

0 sending a first request from an electronic device to an intermediate network device for electronic content on a computer network;

receiving modified electronic content from the intermediate network device on the electronic device, wherein the modified electronic content includes one or more directives, wherein a directive identifies a glyph sub-set including a set of glyphs identified in the modified electronic content and an encoding scheme used to encode the set of glyphs;

15 processing the modified electronic content, thereby identifying the one or more directives;

20 sending a plurality of second requests to the intermediate network device based on the one or more identified directives to request one or more glyph sub-sets to allow the electronic device to display the modified electronic content;

receiving one or more glyph sub-sets from the intermediate network device; and
displaying the modified electronic content using the one or more glyph sub-sets.

16. A computer readable medium having stored therein instructions for causing a central
5 processing unit to execute the method of claim 15.

17. The method of Claim 15 wherein the electronic device includes personal computers,
wireless telephones, personal digital assistants, hand-held computers, set-top boxes or network
appliances.

18. The method of Claim 15 wherein the step of receiving modified electronic content
includes receiving modified electronic content with a plurality of font tags written in a mark-up
language including Standard Generalized Markup Language, Hyper Text Markup Language,
Compact Hyper Text Markup Language, eXtensible Markup Language, Handheld Device
15 Markup Language, Voice Extensible Markup Language, or Wireless Markup Language.

19. The method of Claim 15 wherein the step of receiving one or more glyph sub-sets
from the intermediate network device includes receiving one or more glyph sub-sets including
Chinese, Japanese, Korean, Vietnamese, Hebrew or Arabic glyphs.

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20. The method of Claim 15 wherein the step of processing the modified electronic content, includes identifying one or more directives as Hyper Text Markup Language META tags in a Hyper Text Markup Language header associated with the modified electronic content.

5 21. The method of Claim 15 wherein the electronic device includes a personal computer, wireless telephone, personal digital assistant, hand-held computer, set-top box, or network appliance.

22. A method for dynamic font subsetting, comprising:

10 reading electronic content from local storage on an electronic device, wherein the electronic content includes one or more directives, wherein a directive identifies a glyph sub-set including a set of glyphs identified in the electronic content and an encoding scheme used to encode the set of glyphs;

15 processing the electronic content on the electronic device, thereby identifying the one or more directives;

determining from the one or more directives whether a desired glyph sub-set can be obtained from local storage on the electronic device, and if not,

sending requests to an intermediate network device to obtain glyph sub-sets that can not be obtained from local storage on the electronic device;

20 receiving the glyph sub-sets that can not be obtained from local storage from the intermediate network device on the electronic device; and

displaying the electronic content on the electronic device using the glyph sub-sets
obtained from the intermediate network device.

23. A computer readable medium having stored therein instructions for causing a central
5 processing unit to execute the method of Claim 22.

24. The method of Claim 22 wherein the one or more glyph sub-sets include Chinese,
Japanese, Korean, Vietnamese, Hebrew or Arabic glyphs.

25. The method of Claim 22 wherein the step of processing the electronic content,
10 includes identifying one or more directives as Hyper Text Markup Language META tags in a
Hyper Text Markup Language header associated with the modified electronic content.

26. The method of Claim 22 wherein the electronic device includes a personal computer,
wireless telephone, personal digital assistant, hand-held computer, set-top box, or network
15 appliance.

27. The method of Claim 22 further comprising:
determining from the one or more directives whether a desired glyph sub-set can be
obtained from local storage on the electronic device, and if so,
20 displaying the electronic content on the electronic device using the one or more glyph
sub-sets obtained from local storage.

28. A dynamic font subsetting system, comprising in combination:

a plurality of directives for identifying a glyph sub-set including a set of glyphs identified in electronic content and an encoding scheme used to encode the set of glyphs, wherein the set of glyphs are used display a plurality of characters in one or more desired languages for the electronic content;

electronic content including one or more directives for identifying one or more glyph sub-sets including sets of glyphs identified in the electronic content and encoding schemes used to encode the sets of glyphs; and

an electronic device for displaying electronic content including one or more directives, wherein the electronic device has limited resources can not store all glyphs for all characters in a desired language.

29. The dynamic font subsetting system of Claim 28 further comprising:

an intermediate network device for receiving a first request on an intermediate network

5 device from an electronic device for electronic content including a plurality characters in one or more desired languages, obtaining the requested electronic content on the intermediate network device from a computer network, scanning the electronic content to identify one or more sets of glyphs in the electronic content used for the plurality of characters in the one or more desired languages, creating one or more glyph sub-sets for the one or more identified sets of glyphs, wherein the one or more glyph sub-sets include only glyphs identified in the requested electronic content, inserting one or more directives in the requested electronic content to identify the one or more glyph sub-sets needed to display the plurality of characters in the one or more desired languages in the requested electronic content, thereby creating modified electronic content, wherein a directive identifies a glyph sub-set including a set of glyphs identified in the electronic content and an encoding scheme used to encode the set of glyphs, sending the modified electronic content to the electronic device; and for obtaining one or more glyph sub-sets for an electronic device and sending the one or more glyph sub-sets to the electronic device to allow the electronic device to display glyphs in the modified electronic content.

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5 entries for a plurality of electronic devices wherein the database entries include an identifier for the electronic device and a list of one or more glyph sub-sets obtained or created by the